

# White paper

January 2008

## Z780i

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Your Web Communication phone



Sony Ericsson

# Preface

## Purpose of this document

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This White paper will be published in several revisions as the phone is developed. Therefore, some of the headings and tables in this document contain limited information. Additional information and facts will be forthcoming in later revisions.

The aim of this White paper is to give the reader an understanding of the main functions and features of this phone.

People who can benefit from this document include:

- Operators
- Service providers
- Software developers
- Support engineers
- Application developers

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# Sony Ericsson Developer World

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On [www.sonyericsson.com/developer](http://www.sonyericsson.com/developer), developers will find documentation and tools such as phone White papers, Developers guidelines for different technologies, SDKs and relevant APIs. The Web site also contains discussion forums monitored by the Sony Ericsson Developer Support team, an extensive Knowledge Base, Tips & Tricks, example code and news.

Sony Ericsson also offers technical support services to professional developers. For more information about these professional services, go to the Sony Ericsson Developer World Web site.

## Document history

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### Change history

2007-11-05	PA1	First preliminary revision
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2008-02-28	PA4	4th preliminary revision
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# Product overview

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Z780i is a compact and elegant clamshell form phone with a large 2.2-inch 262k QVGA colour screen. It delivers highly integrated Web functionalities like Media, Web feeds, video and picture blog. Fast HSDPA access, personalisation of RSS and ActiveSync® email make the phone an optimum choice for Web communication.

Memory capacity is up to 35 MB internally and includes a reader for memory cards. You can use the 2.0 megapixel camera to capture high quality pictures. Share your photos and video clips with picture and video blogging, email or MMS. With the preloaded Google Maps Mobile application, you can get the latest maps and directions all over the world straight to your phone.

Features include:

- 2.0 megapixel camera with fixed focus.
- Easy-to-use digital camera menu.
- Photo fix to improve an under-exposed picture immediately.
- 2.2-inch mineral glass high resolution screen.
- The ability to share images using mobile blogging.
- Built-in GPS (Global Positioning System)
- Video blogging.
- Web browser supporting HTML.
- Dynamic Web pointer for Web browsing.
- PictBridge™ to print pictures directly on a printer.
- Slide shows with music, transitions and more.
- 3D gaming.
- Web feeds.
- FM radio with RDS and track identification.
- A handsfree and USB cable provided in the kit.
- A memory card reader for Memory Stick Micro™ (M2™) memory cards.

# Key features

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## **Stereo widening**

The Stereo Widening and Mega Bass™ effects improve the sound experience when listening to music through a stereo Bluetooth headset, external stereo speakers or a stereo portable handsfree.

## **TrackID™**

TrackID™ enables the user to identify a track playing on the built-in radio, or a track playing in the room. A few seconds of the song is sampled, the phone connects to an online database, which identifies the song and returns Title, Artist and Album information.

## **2.0 Megapixel camera**

The main camera is 2.0 megapixel and includes 2.5x digital zoom to take quality pictures with ease. The vertical user interface allows for easier camera handling. The main camera records video clips with 4x digital zoom, and saves them in the phone or on a memory card. A picture or video clip can be shared as a picture message, email message or blog with friends or family. Pictures can also be transferred to another phone or computer using any available transfer method, such as Bluetooth™ or USB cable.

## **2.2-inch colour screen**

The large 2.2-inch (240x320 pixels) full graphic QVGA 262k colour screen enhances viewing, facilitating high-quality multimedia and entertainment.

## **Built-in GPS (Global Positioning System)**

With the built-in GPS, and location based services such as preloaded Google Maps™ for mobile and a free three-month trial version of Wayfinder Navigator™, you can find out where you are and how to find your way. The built-in GPS supports geo tagging. When a photo is taken it is tagged with geo data, meaning that the location where the photo was taken can be shown on a map. The phone also features the sports application Tracker, which allows you to keep track of your speed, distance, route and energy consumption during training.

## **Video camera**

The built-in camera captures a video recording and saves it in the phone or on a memory card. A video clip can be shared as a picture message or email with friends or family, or using any available transfer method such as Bluetooth™ wireless technology. The phone supports QVGA size video recording.

## **Web feeds**

A built-in RSS (Really Simple Syndication) Reader is used in combination with the Internet browser. When browsing, frequently updated content such as news headlines or podcasts can be received as feeds.

## **Web feeds ticker**

News headlines you subscribe to can be shown in standby using Web feeds.

## **HTML Web browser support**

Browse the Internet and look at Web sites in a different way with Access NetFront™ 3.4 – an HTML browser which supports a complete Web standard suite.

## **Landscape browsing support**

View Web pages in landscape mode.

## **Mobile blogging**

Send pictures and video clips using the Internet to show on your personal blog, allowing people easy access to view and comment on your pictures and video clips.

## **Photo tags**

Navigate through your captured photos and thousands of downsized photos transferred from your computer. View captured photos and video clips in an intuitive timeline view. Play animated slide shows with music and different moods. Tag your photos to find them faster.

## **PictBridge™ – Camera printing**

Print pictures from the phone using the USB cable directly to a printer, without a computer or photo editing software.

## **Push email**

The phone supports push email, a method of pushing new email messages automatically to mobile devices. Push email increases mobile email usability, with email being delivered in the background (similar to SMS or MMS).

## **Media**

A unique Sony Ericsson media experience. All media can be accessed directly from the desktop. Navigate seamlessly through captured photos and video clips, pictures, photo tags, music, videos and more.

## **Music player**

Located in Media. Play downloaded music and audio. The navigation system enables you, for example, to browse through your favourite tracks and create simple playlists.

## **Video player**

Located in Media. Play saved and downloaded video clips.

## **Sony Ericsson Media Manager**

Music, photo and video clip management software is available on the CD which is included in the kit. Transfer music, video clips and photos to and from your phone. Prepare files for transfer even when your phone is not connected to your computer. Search for and select music on your computer or audio CDs and convert your existing audio tracks to formats that are suitable for mobile use before transferring them to your phone. You can also subscribe to feeds such as video and music podcasts.

## **PlayNow™ 4.0**

A unique and easy-to-use direct link for purchasing and downloading content like music, games, ringtones and themes. Users can preview music tracks and ringtones before purchase.

Most formats that are supported in the phone are possible to download. The music formats are MP3, MP4 and WAV (Polyphonic 24 voices or more).

## **PlayNow™ 5.0**

A unique and easy-to-use direct-link for downloading ringtones, full track music, games, themes and wall-papers. PlayNow™ offers best-selling content for mobile download. Users can preview content before purchase. Users have access to a catalogue of thousands of tracks and ringtones from both international and local labels.

By combining the PlayNow™ catalogue with unique applications like TrackID™ users are presented with a My TrackID™ list and TrackID™ Charts by country, created by TrackID™ users around the world. These charts are based on what songs other users are searching for and want to hear the most. PlayNow™ supports MP3 and Windows Media DRM file formats for music.

## **M-BUZZ**

M-BUZZ is a promotional site for breaking new and developing artists. M-BUZZ includes full track music, videos, gig schedules and information about the stars of tomorrow. M-BUZZ provides consumers with the possibility to discover new music which otherwise might pass them by. At the same time, the site offers artists and songwriters the opportunity to have their music heard by millions of consumers.

## **3D Gaming**

Gaming is a very popular feature in mobile phones. At purchase there are premium quality 3D games preloaded. With Java™, users can download new games and skill levels to further enhance their entertainment experience.

## **Java™**

Download additional applications which are information- and entertainment-based. This gives users a chance to personalize the functions and features in their phones, and developers the opportunity to create new applications. Java Platform 8.3 (JP-8.3), supports a range of new Java programming features including instant messaging (chat) and presence-based functionality, handling banking, payment transactions, user identification and authentication through secure encryption technology.

## **Bluetooth™ wireless technology**

Several devices (simultaneous Bluetooth™ connections) can be connected up to 10 metres (33 feet) away using Bluetooth wireless technology. For example, when the phone rings, it can be answered with a Bluetooth headset, and images can be sent to another phone at the same time. Several mobile phones can take part in a Bluetooth-supported game and the phone and a computer can exchange data such as images, video clips, vCards, music files and calendar data. Bluetooth version 2.0 and Enhanced Data Rate (EDR) is supported.

## **Bluetooth™ audio streaming**

Listen to audio in compatible devices. By connecting a Bluetooth Advanced Audio Distribution Profile (A2DP) compatible accessory, such as a stereo Bluetooth headset or a Bluetooth music receiver, you can enjoy high quality stereo audio streaming wirelessly from the phone. Many A2DP accessories also support the Bluetooth Audio Video Remote Control Profile (AVRCP) allowing you to control the music player in the phone using the accessory interface.

## **USB 2.0 mass storage**

When connecting the phone to a computer using the provided USB cable, the memory in the phone appears on the computer screen as a removable disk along with other disks and drives in the computer. You can then quickly and easily drag and drop items such as images, documents, music and video clips between folders in the phone and the computer.



### **Media Transfer Protocol (MTP)**

With Media Transfer Protocol you can transfer media files and synchronize playlists when the phone is connected to the computer using the USB cable. It is possible to use MTP in Media transfer mode or Phone mode. MTP is supported by Windows Media Player 11 and higher in Windows XP and in Windows Vista™ it is also supported.

### **Personal Information Management (PIM)**

Stay up-to-date with everyday events by synchronizing phone contacts, calendar appointments, tasks and notes in the phone with similar programs in a computer. The USB cable which comes with the phone, or the built-in Bluetooth feature can be used together with the synchronization software which is available on the CD in the kit or can be downloaded from [www.sonyericsson.com/support](http://www.sonyericsson.com/support). Smart search your contacts and call list for phone numbers or names from standby.

### **Common Internet File System (CIFS)**

The Common Internet File System enables file transfer to and from your phone. The phone acts as a file server which allows you to copy and move files between your PC and the server. You can use this feature when connected using the USB cable or the Bluetooth connection.

# Images

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# Technologies in detail

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This chapter includes short descriptions of the technologies available in Z780i compared to other Sony Ericsson product.

# Functions and features

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The following includes short descriptions of the technologies available in Z780i and Z750.

Feature	Z780i	Z750
<b>3D games</b>	Yes	Yes
<b>3G enabled</b>	Yes	Yes
<b>A-GPS</b>  Assisted GPS. Support for control plane and SUPL (Secure User Plane Location protocol)	Yes	No
<b>Activity menu (multi-tasking)</b>  The user can easily handle missed calls, new text and picture messages, task reminders, shortcuts and get quick access to favourite Internet bookmarks	Yes with enhanced functionality for background applications	Yes with enhanced functionality for background applications
<b>Alarm clock</b>  Set up to five individual times for single or recurring weekly alarms	Yes	Yes
<b>Auto rotate</b>  The picture appears as a landscape or portrait picture, as it was originally taken	No	Yes
<b>Backlight</b>  White backlight to illuminate the phone screen	Yes	Yes
<b>Battery</b>	BST-38 3.6V, 950mAh, Lithium Polymer	BST-33 3.6 V, 930 mAh, Lithium Polymer
<b>Battery charging time</b>	At least 90% charged within 2 hours. Fully charged within 2.5 hours	At least 90% charged within 2 hours. Fully charged within 2.0 hours

Feature	Z780i	Z750
<b>BestPic™</b>  Enhance picture taking by automatically capturing a range of nine pictures ranging from before to after a camera key press. Select the best picture to catch the moment. You can also save more than one picture.  Select BestPic™ speed BestPic™ with light	No     No No	No     No No
<b>Bluetooth™ audio streaming</b>  Listen to audio in compatible devices	Yes	Yes
<b>Bluetooth™ audio video remote control</b>  Control music player functions from a Bluetooth™ accessory, and control the volume in the accessory from the phone	Yes	Yes
<b>Bluetooth™ PAN</b>  Connect the phone to Internet using Bluetooth™ technology	Yes	Yes
<b>Bluetooth™ wireless technology</b>  Wireless connectivity between devices within a range of up to 10 metres (33 feet). Support for specification of the Bluetooth System, version 2.0 and EDR	Yes	Yes
<b>Business card exchange</b>  Exchange contact information	Yes	Yes
<b>Calculator</b>	Yes	Yes
<b>Calendar</b>  Calendar with day, week and month views and reminders	Yes	Yes
<b>Call list</b>  View calls made and received	Yes	Yes
<b>Camera</b>	2.0 Megapixel	2.0 Megapixel
<b>Camera active lens cover</b>  Open the cover and camera functionality starts automatically	No	No

Feature	Z780i	Z750
<b>Camera auto focus</b>  The camera automatically focuses on the subject in a focus area in the screen/viewfinder	No	No
<b>Camera face detection</b>  The camera brings an off-centre face into focus	No	No
<b>Camera file browser</b>  Browse the picture folder without leaving the camera function	Yes	Yes
<b>Camera flash</b>	No	No
<b>Camera image stabilizer</b>  Picture and video image stabilizer functionality. If available, use to keep the image steady	No	No
<b>Camera key</b>  A dedicated camera key	No	Yes
<b>Camera keys on top</b>  When the camera is used in horizontal mode, the side keys with camera functionality are on top, for a digital still camera feel. For photo key functionality, see also “Keys – side and other” on page 20	No	No
<b>Camera menu</b>  Easy-to-use horizontal digital camera menu	No	Yes
<b>Camera mode switch</b>  Use to switch between picture, video and play modes	No	No
<b>Camera on/off key</b>  A dedicated camera on/off key. Press and hold to activate the integrated camera and to open the lens cover	No	No
<b>Camera red eye reduction</b>	No	No

Feature	Z780i	Z750
<b>Camera scene modes</b>  Use predefined settings when taking pictures in different environments, for example, at night or fast-moving objects	No	No
<b>Camera settings bar</b>  Settings bar with options and info texts	Yes	Yes
<b>Camera touch keys</b>  Above and below the camera viewfinder there are eight touch keys, acting as shortcuts to commonly used camera features	No	No
<b>Chinese input method</b>  Chinese input methods: Text input methods based on Simplified or Traditional Chinese. Bopomofo, Pinyin or Stroke	No	Yes
<b>Circuit Switched Data</b>  CSD  HSCSD – a communications standard enabling GSM data transfer 14.4 Kbps.	Yes  Yes	Yes  Yes
<b>Clock</b>  On-screen clock that keeps time even when the phone is off	Yes	Yes
<b>Co-branding area</b>	TBI	1.7"-0.35" (43.61 x 8.95 mm)
<b>Code memo</b>  A safe place to save all PIN codes and other information. To access Code memo, only one PIN code is needed	Yes	Yes
<b>Colours</b>		Rose Pink Phantom Grey Mysterious Purple Platinum Silver
<b>Contacts</b>  Phonebook with fields for name, phone, fax and instant messaging information, presence information, email address, Web site, title, company address info, personal address info and birthday	Yes	Yes

<b>Feature</b>	<b>Z780i</b>	<b>Z750</b>
<b>Conference calls</b>  Support for multiparty calling	Yes	Yes
<b>Connector A1 (Fast port)</b>	Yes (bottom)	Yes (side)
<b>Content online</b>  Downloadable pictures, games, themes, ringtones available online	Yes	Yes
<b>Copyright protection - DRM</b>  DRM (Digital Rights Management) features the rights and copy protection of downloaded content (audio, pictures, music tones, video clips and entertainment features such as games, Java applications etc.)	Yes, OMA DRM 1.0 and OMA DRM 2.0 , Microsoft DRM Janus, Microsoft DRM Camese	Version 2.0
<b>Device Management (DM)</b>  DM utilizes GPRS as a bearer (basic network connectivity needs to be in place) of the provisioning data and allows the operator to access the phone, check and send out different settings such as network connectivity (GPRS), email, MMS, Internet settings and Java™. Device Management is achieved by supporting OMA Client Provisioning 1.1 (CP) and OMA Device Management (DM) 1.2	Yes	Yes
<b>Digital zoom</b>	2.5x for pictures (VGA mode) 4x for video clips	2.5x (for pictures and video clips) 2x (for video calls)
<b>Email</b>  Built-in email client with inbox, outbox, compose/send and other functions	Yes	Yes
<b>EMS (Enhanced messaging)</b>  Text messaging (SMS) with support for pictures and sounds  Note: EMS is not available for operators who use unified messaging	Yes	Yes



Feature	Z780i	Z750
<b>Exterior description</b>		
Size mm (Length x width x thickness/ thinness)	95x 47.5 x 17	97.4x 49 x 20
<b>External antenna connector</b>	No	No
For use with an advanced car handsfree accessory		
<b>Fast port</b>	Yes	Yes
A system connector which enables faster data transfer between the phone and a computer		
<b>File manager</b>	Yes with enhanced functionality for camera content	Yes with enhanced functionality for camera content
Folder structure storage to help save and organize pictures, sounds and other phone content		
<b>Flash themes</b>	No	Yes
<b>Flight mode</b>	Yes	Yes
All phone radio transceivers are inactivated. Flight mode starts the phone so that only certain functions are available, such as the calendar, the music player or a game. The phone may then be used in some areas, such as aeroplanes or hospitals, where full mobile phone functionality is not allowed		
Bluetooth™ function availability in Flight mode	Yes	Yes
<b>FM radio with RDS</b>	Yes	Yes
FM radio with presets, auto and manual search. The handsfree is used as an antenna. The radio can also be used as an alarm signal		
<b>FM radio with TrackID™</b>	Yes	Yes
Identify tracks playing on the radio		
<b>Form factor</b>	Clamshell	Clamshell
<b>Games download</b>	Yes	Yes
Add more games to your phone		
<b>Games embedded</b>	Yes	Yes

Feature	Z780i	Z750
<b>Geo tagging</b>  Photos are tagged with geo data and can be shown on a map	Yes geo data from GPS	No
<b>Google Maps for mobile</b>  Preloaded application with support for cell-id and GPS. View satellite imagery, find locations and calculate routes	Yes	No
<b>GPRS</b>  General Packet Radio Services – a communications standard enabling packet data transfer of 21.4 Kbps per time slot. Multislot class 10 supported (max 5 simultaneously)	Yes	Yes
<b>GPS</b>  A built-in Global Positioning System receiver	Yes	No
<b>High Speed Data</b>  HSDPA – High Speed Downlink Packet Access	Yes	Yes
<b>Icon Desktop 12</b>  A graphic icon desktop with 12 interactive icons	Yes	Yes
<b>Image formats</b>  <b>5 MP</b> (2592x1944 pixels)  <b>3 MP</b> (2048x1536 pixels)  <b>2 MP</b> (1632x1224 pixels)  <b>1 MP</b> (1280x960 pixels)  <b>VGA</b> (640x480 pixels)  Note: MP = Megapixel. When the picture stabilizer is on, the image size may be slightly reduced	No  No  Yes  Yes  Yes	No  No  Yes  Yes  Yes

Feature	Z780i	Z750
<b>Infrared port</b>  A wireless connector enabling the user to connect the phone to a laptop or another infrared device in order to share pictures, synchronize calendar or use the phone as a modem	No	No
<b>Instant messaging (Wireless Village/My friends)</b>  Chat – several people can take part in a mobile messaging session. Instant messaging/Wireless Village server community	Yes	Yes
<b>Internet blogging</b>  Share over the Internet on your personal Web site. The size of uploaded pictures is dependent on customizations	Yes	Yes
<b>Internet browser</b>  Full HTML support, ECMA script, DOM level 1&2, CSS 1&2 etc.  Support for AJAX (Asynchronous JavaScript and XML)  Progressive download of video files.  Direct access to Bookmarks, Search Internet and Enter address	Yes  Yes  Yes  Yes  Yes	Yes  Yes  Yes  Yes  Yes
<b>Internet security</b>  Encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping	Yes, SSL/TLS	Yes, SSL/TLS
<b>Java™</b>  Support for J2ME™ technology  Java Platform 8.3 (JP-8.3) Support for new Java programming features including instant messaging/chat, banking, payment transactions, user identification and authentication through secure encryption technology.	Java 2, Micro Edition (J2ME™), Java 3D™  Yes	Java MIDP 2.0, Java 2, Micro Edition (J2ME™), Java 3D™ 1.1  Yes

Feature	Z780i	Z750
<b>Keys – navigation and more</b>	4+1 navigation key  multimedia (play/stop) on navigation key centre  2 (left + right) selection keys  C (Clear) key  Activity menu key  Red end key  Green call key  On/off key	4+1 navigation key  multimedia (play/stop) on navigation key centre  2 (left + right) selection keys  C (Clear) key  Activity menu key  Red end key  Green call key  Internet/operator key  On/off key
<b>Keys – keypad</b>	12 alphanumeric	12 alphanumeric
<b>Keys – side and other</b>	Volume	Volume/camera zoom key  Camera key  Gomusic key
<b>Lunar calendar</b>  A calendar system used in China and other parts of Asia. A lunar month is determined by the period required for the moon to complete its full cycle of 29.5 days and is available in Chinese phone variants	Yes	Yes
<b>Adobe™ Flash Lite™</b>  For animated wallpapers, menus and other graphic elements	No	Yes

Feature	Z780i	Z750
<b>Media</b>  A centre for all media content with horizontal and vertical navigation. You can view photos, listen to music, watch video clips	Yes	Yes
<b>Media player</b>  	See Music player and Video player	See Walkman® player and Video player
<b>Mega Bass™</b>  An audio feature which enhances bass frequencies for better overall music experience	Yes	Yes
<b>Memory (built-in)</b>  Phone memory that is free to use (depending on software configuration and file content). Many applications share phone memory. The maximum amount of storage available for any one application, such as calendar entries, is affected by the amount of memory used by other applications, such as messaging, music, pictures and so on	TBI	Up to 64 MB
<b>Memory card reader (slot)</b>  A slot for inserting a micro peripheral storage device  Memory card support: Memory Stick Micro™ (M2™)	Yes  Yes No	Yes  Yes No
<b>Menu layout options</b>  Possibility to change the layout of the icons in the main menu	Yes	Yes
<b>Menu shortcuts</b>  A function making it possible to dedicate shortcuts to the most-used phone functions	Yes	Yes
<b>MMS (Multimedia messaging)</b>  Picture messaging with text and sound	Yes	Yes
<b>MMS video</b>  Support in the phone for sending video clips using MMS	Yes	Yes

Feature	Z780i	Z750
<b>Modem</b>  Circuit Switched/Packet Switched Internet dial-up support	Yes	Yes
<b>MusicDJ™</b>  A sampler music tool with MIDI drum, guitar, keyboard, bass and brass loops in different music styles, which can be combined to create polyphonic ringtones	Yes	Yes
<b>Music listening time</b>	Up to 8 hours	Up to xx hours
<b>Music player 3.0</b>  A digital music player with horizontal navigation. Play music you have transferred or downloaded. The list structure system enables you, for example, to organize favourite songs into groups and create simple playlists.	Yes	See Walkman® player and Video player
<b>Music tones</b>  Music tones, also called master tones, are DRM protected music by original artists. Various digital audio formats are supported	Yes	Yes
<b>My friends</b>  See Instant messaging	Yes	Yes
<b>Networks</b>  3G/HSDPA  GSM/GPRS/EDGE	UMTS/ HSDPA 850, 1900, 2100  GSM (R99) 850, 900, 1800, 1900. E-GSM 900	UMTS 850, 1900, 2100  GSM (R99) 850, 900, 1800, 1900. E- GSM 900
<b>OMA Data Synchronization (SyncML)</b>  A device communications standard that enables remote synchronization between devices	Yes  OMA DS 1.2 OMA DS 1.1.2	Yes  SyncML 1.2 SyncML 1.1
<b>OTA settings</b>  Internet, email and other settings can be sent over the air to the phone	Yes  OMA CP 1.1	Yes

Feature	Z780i	Z750
<b>Photo light (built-in)</b>  When lighting conditions are poor, activate the picture light	No	No
<b>PhotoDJ™</b>  A drawing tool in the phone where existing pictures can be altered	Yes	Yes
<b>Photo fix</b>  Improves an under-exposed picture by calculating and adjusting the light balance	Yes	Yes
<b>PictBridge™</b>  Transfer images from the phone via the USB cable directly to a printer, without a computer or photo editing software	Yes	Yes
<b>Picture gallery</b>  A thumbnail image gallery where sections of several pictures can be viewed at the same time	Yes Use photo tags	Yes Use photo tags
<b>Picture phonebook</b>  Add a picture to a saved contact. The picture appears on the screen when the saved contact calls	Yes	Yes
<b>PlayNow™ (direct link)</b>  Listen to music before you purchase and download it to your phone	Yes	Yes
<b>PlayNow™ Games (direct link)</b>  Download and purchase games straight from the phone desktop	Yes	Yes
<b>Polyphonic voices</b>	72	72
<b>Powersave</b>  default setting for display light	Yes	Yes
<b>Predictive text input</b>	Yes	Yes
<b>Push email</b>	Yes	Yes
<b>RSS reader</b>	See Web feeds	Yes

Feature	Z780i	Z750
<b>Web feeds ticker</b>	Yes	Yes
View news headers in standby		
<b>Screen</b>		
Type:	Full graphical	Full graphical
Size:	2.2 inches	2.2 inches
Resolution:	320x240	320x240 pixels
Technology:	pixels	TFT, QVGA
Colours displayed together:	TFT, QVGA	262,000 (18 bit)
Backlight colour:	262,000 (18 bit)	White
	White	
<b>Screen saver</b>	Yes	Yes
<b>SensMe™</b>	No	Yes
Sort music tracks by mood		
<b>Settings download (Ready to run)</b>	Yes	Yes
Set up functions that require a connection to the Internet such as the Internet browser and picture messaging. This function runs in the setup wizard or can also be chosen in the Settings menu. This function is not included in the setup wizard for customized phones		
<b>Shake control</b>	No	No
Shake control for music and gaming		
<b>SIM card lock</b>	Yes	Yes
The possibility to protect the SIM card with a four-digit PIN code		
<b>Smart search</b>	Yes	Yes
Search for numbers and contacts from standby by using the number keys. Call or send messages from a filtered list of search results.		
<b>SMS long (Text messaging)</b>	Yes	Yes
Concatenated SMS text messaging		



Feature	Z780i	Z750
<b>Sleep mode</b>  A power-saving feature that minimizes the battery power consumed when the phone is in standby	Yes	Yes
<b>Sony Ericsson Remote Update Service</b>  Download the latest operator-approved software, over the air, for your mobile phone	Yes	Yes
<b>Sony Ericsson Update Service</b>  Connect the phone to an Internet-connected computer, download the latest operator-approved software from the Web site, <a href="http://www.sonyericsson.com/support">www.sonyericsson.com/support</a> and update the mobile device	Yes	Yes
<b>Sound recorder</b>  A recording device in the phone that can record voice messages or other sounds	Yes	Yes
<b>Speakerphone</b>	Yes	Yes
<b>Speed dialling</b>  Allocate contacts in the phone book to specific keys on the keypad	Yes	Yes
<b>Standby time</b>  GSM UMTS	Up to:  300 hours 300 hours	Up to:  400 hours 350 hours
<b>Status view</b>  The screen shows the network being used, the time and other status information	Yes	Yes
<b>Stereo microphone</b>	No	No
<b>Stereo speakers</b>	No	No
<b>Stopwatch</b>	Yes	Yes
<b>SVG Tiny</b>  Scalable Vector Graphics for impressive animated wallpapers, menus and other graphic elements	Yes	Yes

<b>Feature</b>	<b>Z780i</b>	<b>Z750</b>
<b>Synchronization PC</b>  Synchronize and share phone content with a computer	Yes	Yes
<b>Talk time</b>  GSM UMTS	Up to:  9.5 hours 5.5 hours	Up to:  9 hours 3.5 hours
<b>Tasks</b>  Keeps track of important things you have to do	Yes	Yes
<b>Themes</b>  Phone menu texts and background graphics	Yes	Yes
<b>Timer</b>  Set the phone to alert after a specific time	Yes	Yes
<b>TrackID™</b>  Music recognition  Text search for artist, album, track, lyrics etc.	Yes  Yes	Yes  Yes
<b>UMTS</b>	Yes	Yes
<b>USB connectivity support</b>  Connect the phone to a computer using the USB cable provided.	Yes  USB 2.0 Full-Speed	Yes  USB 2.0 Full-Speed
<b>USB ethernet emulation</b>  Connect to the Internet using the phone or the computer	Yes	Yes
<b>Vibrating alert</b>  The phone vibrates when a call comes in	Yes	Yes
<b>Video blogging</b>  Share video clips over the Internet on your personal Web site. The size of uploaded video clips is dependent on customizations	Yes	Yes
<b>Video call camera</b>	No	Yes

Feature	Z780i	Z750
<b>Video calling</b>  When you make a video call, the other party can be seen on the screen. The service requires UMTS/WCDMA	No	Yes
<b>Video call talk time</b>	N/A	3 hours 20 minutes
<b>VideoDJ™</b>  Create video sequences by combining different clips and adding music and images	Yes	Yes
<b>Video player</b>  Play video clips you have transferred or downloaded. Transfer video clips to another phone or a computer using an available transfer method	Yes	Yes
<b>Video streaming</b>  Real-time streaming of video clips, for example, live cam. Media can also be downloaded and saved in the phone memory	Yes	Yes
<b>Viewfinder</b>  When using the camera, a picture can be previewed before it is captured	Yes	Yes
<b>Voice control</b>  Voice answer, reject and call. Assign voice commands to items in the phonebook. When a call is made, the voice command can be used instead of pressing keys	Yes	Yes
<b>Voicemail</b>  Support for voicemail operator service including automatic answering and message recording	Yes	Yes
<b>Wayfinder Navigator™</b>  A free three-month trial version of Wayfinder Navigator is included	Yes	No
<b>Walkman® key</b>  Get direct access to your music files without having to browse the menus. Press the Walkman® key to gain direct access to the Walkman® player	No	No

Feature	Z780i	Z750
<b>Walkman® player</b>  A digital music player with horizontal navigation. Play music you have transferred or downloaded. Play music files in the folder system, organize your favourite tracks into groups and create various playlists.	No	No
<b>WAP 2.0 XHTML</b>  A mobile Internet standard to access specially designed Internet sites. WAP 2.0 supports colour and interactive lists	Yes	Yes
<b>Web feeds</b>  Frequently updated content delivered as feeds via a Web site, for example, news headlines in the browser	Yes	Yes
<b>Weight</b>	96 g (including battery)	110 g

# Facts and figures

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This chapter offers readers a detailed listing of all the technical data relating to the product. Comprehensive descriptions of performance and technical characteristics are presented in table format for quick and easy access.

# Technical specifications

## General technical data

System	Quad-band GSM Release 5 recommendations, GSM-850, GSM 900, e-GSM 900, GSM 1800, GSM 1900 Tri band UMTS/HSDPA 850, 1900, 2100 supported.
Speech coding	HR, FR, EFR, AMR, supported where available, for high speech quality.
GSM SIM/ UMTS USIM card	GSM SIM - GSM 11.11, UMTS SIM - 3GPP™ TS 31.101. Small plug-in card, 1,8 V and 3 V.
Memory	Up to 64 MB internal (depending on software configuration/file content) + extra slot for supported memory cards.
Data transfer speeds	Up to 3.6 Mbps (downlink, HSDPA, cat 6) Up to 384 Kbps (uplink, WCDMA R99)

## Performance and technical characteristics

Property	WCDMA 850	WCDMA 1900
Frequency range (MHz)		
Channel spacing		
Number of channels		
Modulation		
TTI		
TX Phase Accuracy		
Duplex spacing		
Frequency stability		
Voltage operation (nominal)		
Transmitter RF power output		
Transmitter Output impedance		
Transmitter Spurious emission (according to specification)		
Receiver RF sensitivity		
Receiver RX Bit error rate		

<b>Property</b>	<b>WCDMA 1700</b>	<b>WCDMA 2100</b>
Frequency range (MHz)		TX:1920–1980 RX:2110–2170
Channel spacing		5 MHz with 200 kHz channel rasters
Number of channels		277
Modulation		QPSK (WCDMA R99) QPSK/16 QAM (HSDPA)
TTI		10 ms (WCDMA R99) 2 ms (HSDPA)
TX Phase Accuracy		Error Vector Magnitude: <17.5%
Duplex spacing		190 MHz
Frequency stability		+/- 0.1 ppm
Voltage operation (nominal)		3.6 V
Transmitter RF power output		24 dBm Class 3 (0.25 W peak)
Transmitter Output impedance		50 ohm
Transmitter Spurious emission (according to specification)		< -36 dBm up to 1 GHz < -30 dBm over 1 GHz (according to 3GPP™ spec.)
Receiver RF sensitivity		Better than -106.7 dBm @ 12.2 kbps CS voice
Receiver RX Bit error rate		< 0.1%

<b>Property</b>	<b>GSM 850</b>	<b>GSM 900/ E-GSM 900</b>
Frequency range (MHz)	TX: 824-849 RX: 869-894	TX: 880-915 RX: 925-960
Channel spacing	200 kHz	200 kHz
Number of channels	124 Carriers *8 (TDMA)	174 Carriers *8 (TDMA)
Modulation	GMSK	GMSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	45 MHz	45 MHz
Frequency stability	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V

Property	GSM 850	GSM 900/ E-GSM 900
Transmitter RF power output	33 dBm Class 4 (2 W peak)	33 dBm Class 4 (2 W peak)
Transmitter Output impedance	50 ohm	50 ohm
Transmitter Spurious emission (according to specification)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz
Receiver RF sensitivity	Better than – 104 dBm	Better than – 102 dBm
Receiver RX Bit error rate	< 2.4%	< 2.4%

Property	GSM 1800	GSM 1900
Frequency range (MHz)	TX: 1710–1785 RX: 1805–1880	TX:1850–1910 RX:1930–1990
Channel spacing	200 kHz	200 kHz
Number of channels	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	GMSK	GMSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	95 MHz	80 MHz
Frequency stability	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V
Transmitter RF power output	30 dBm Class 1 (1 W peak)	30 dBm Class 1 (1 W peak)
Transmitter Output impedance	50 ohm	50 ohm
Transmitter Spurious emission (according to specification)	< - 30 dBm	< - 30 dBm
Receiver RF sensitivity	Better than – 102 dBm	Better than – 102 dBm
Receiver RX Bit error rate	< 2.4%	< 2.4%

## USSD technical data

Feature	Support
USSD support	GSM Phase 1/2 (Cross-phase compatibility)



Feature	Support
Mode support	UI-mode supported SAT initiated USSD supported
UI-mode details	<ul style="list-style-type: none"> <li>It is possible to scroll the text up and down in USSD messages.</li> <li>It is possible to highlight embedded numbers and take actions accordingly.</li> </ul>

## GPRS technical data

Property	Support
Compatible GPRS/EDGE and SMG specifications	Release 99 according to ETSI specification
Data rates GPRS (per time slot)	Coding scheme CS-1: 9 Kbps CS-2:13,4 Kbps CS-3:15,6 Kbps CS-4:21,4 Kbps (network-dependent).
Data rates EDGE (per time slot)	Modulation & coding scheme (MCS) MCS-1 (GMSK): 8,0 Kbps MCS-2 (GMSK): 11,4 Kbps MCS-3 (GMSK): 14,8 Kbps MCS-4 (GMSK): 17,6 Kbps MCS-5 (8-PSK): 22,4 Kbps MCS-6 (8-PSK): 29,4 Kbps MCS-7 (8-PSK): 44,8 Kbps MCS-8 (8-PSK): 54,4 Kbps MCS-9 (8-PSK): 59,2 Kbps
Medium Access Modes	Dynamic allocation
Support of Packet Control Channels (PBCCH/PCCCH)	Yes
Network operation mode	NOM I, II, III
Support of GPRS/CS combined procedures	Yes
Network control mode	NC0 and 2
Support of access in 2 phases	Yes
Support of PRACH on 11 bits	Yes
Support of GPRS re-selection C31/C32	Yes
Support of static and dynamic addressing	Yes
Support of power control Uplink and Downlink	Uplink = yes, Downlink is a network feature

Property	Support
Support of ciphering algorithms	GEA1, GEA2
Support of compression algorithms	Yes, V42bis and IP header compression
Mode of operation	Class B and Class C modes of operation supported
R Reference point	Physical layer: Support of RS232 PPP is supported as L2 layer in the R reference point Authentication algorithms PAP, CHAP supported
IP connectivity	PDP type IP is supported. IP termination in mobile or TE (laptop, PDA) is supported
PDP context	10 PDP context descriptions saved in the phone. PDP context description is edited via application in the phone, AT-command or via OTA. Simultaneous PDP contexts are supported, maximum 4
SIM	GPRS aware, as well as non-GPRS aware, SIM cards are supported
AT commands	Some of the supported commands: AT+CGDCONT - DEFINE PDP CONTEXT AT+CGEQREQ - Quality of Service Profile (REQUESTED) AT+CGEQMIN - Quality of Service Profile (Minimum Acceptable) AT+CGATT - PACKET DOMAIN SERVICE ATTACH OR DETACH AT+CGACT - PDP CONTEXT ACTIVATE OR DEACTIVATE AT+CGDATA - ENTER DATA STATE
For more information, see <a href="http://www.sonyericsson.com/developer">www.sonyericsson.com/developer</a>	

## SIM AT services supported

Service	Mode	Support
CALL CONTROL BY SIM		Yes
MO SMS CONTROL		Yes
DATA DOWNLOAD TO SIM	Cell Broadcast SMS	Yes Yes
DISPLAY TEXT	Text of up to 240 characters (120 UCS2 coded).	Yes
	bit 1: 0 = normal priority	Yes
	1 = high priority	Yes
	bit 8: 0 = clear message after a delay	Yes
	1 = wait for user to clear message	Yes

Service	Mode	Support
GET INKEY	General: The GET_INKEY requires that the user confirms his/her choice	Yes
	bit 1: 0 = digits (0-9, *, # and +) only	Yes
	1 = alphabet set	Yes
	bit 2: 0 = SMS default alphabet	Yes
	1 = UCS2 alphabet	Yes
	bit 3: 0 = character sets defined by bit 1 and bit 2 are enabled	Yes
	1 = character sets defined by bit 1 and bit 2 are disabled and the Yes/No response is requested	Yes
GET INPUT	General: No. of hidden input characters	252
	bit 1: 0 = digits (0-9, *, # and +) only	Yes
	1 = alphabet set	Yes
	bit 2: 0 = SMS default alphabet	Yes
	1 = UCS2 alphabet	Yes
	bit 3: 0 = ME may echo user input on the display	Yes
	1 = user input not to be revealed in any way (see note)	Yes
	bit 4: 0 = user input to be in unpacked format	Yes
	1 = user input to be in SMS packed format	Yes
	bit 8: 0 = no help information available	Yes
	1 = help information available	Yes
LAUNCH BROWSER		Yes
MORE TIME		Yes
PLAY TONE		Yes
POLLING OFF		Yes
POLL INTERVAL		Yes
PROVIDE LOCAL INFORMATION	'00' = Location Information (MCC, MNC, LAC and Cell Identity)	Yes
	'01' = IMEI of the ME	Yes
	'02' = Network Measurement results	Yes
	'03' = Date, time and time zone (DTTinPLI)	Yes
	'04' - Language setting	Yes
	'05' - Timing advance	Yes

Service		Mode	Support
REFRESH		General: The reset option requests the user to wait while the phone restarts	Yes
		'00' = (U)SIM Initialization and Full File Change Notification	Yes
		'01' = File Change Notification	Yes
		'02' = (U)SIM Initialization and File Change Notification	Yes
		'03' = (U)SIM Initialization	Yes
		'04' = (U)SIM Reset	Yes
		'05' = SIM/USIM Application Reset	Yes
		'06' = 3G Session Reset	Yes
SELECT ITEM			Yes
SEND DTMF			Yes
SEND SHORT MESSAGE	bit 1:	0 = packing not required	Yes
		1 = SMS packing by the ME required	Yes
SEND SS			Yes
SEND USSD			Yes
SET UP CALL		General: Capability configuration	Yes
		Set-up speech call CallParty Subaddress	No
		DTMF support	Yes
		'00' = set up call, but only if not currently busy on another call	Yes
		'01' = set up call, but only if not currently busy on another call, with re-dial	Yes
		'02' = set up call, putting all other calls (if any) on hold	Yes
		'03' = set up call, putting all other calls (if any) on hold, with re-dial	Yes
		'04' = set up call, disconnecting all other calls (if any)	Yes
		'05' = set up call, disconnecting all other calls (if any), with re-dial	Yes
SET UP EVENT LIST		'00' = MT call	Yes
		'01' = Call connected	Yes
		'02' = Call disconnected	Yes
		'03' = Location status	Yes

Service	Mode	Support
	'04' = User activity	Yes
	'05' = Idle screen available	Yes
	'06' = Card reader status	Not Applicable
	'07' = Language selection	Yes
	'08' = Browser termination	Yes
	'09' = Data available	Yes
	'OA' = Channel status	Yes
SET UP IDLE MODE TEXT		Yes, 1 row of text is supported
SET UP MENU		Yes
TIMER MANAGEMENT		Yes
OPEN CHANNEL		Yes
CLOSE CHANNEL		Yes
RECEIVE DATA		Yes
SEND DATA		Yes
GET CHANNEL STATUS		Yes

## User Interaction with SIM AT

### Display text

Text of up to 240 characters (120 UCS coded) is supported.

Text clearing times are 5-20 seconds with a 60-second time-out limit for the user to clear the text. 'Key' responses:

- 'End key' – Proactive session terminated by user.
- 'Back' – Backward move in proactive session.

MSK clears the screen if the command is performed successfully.

### Get inkey

Prompt for a one-character input. Pressing 'Ok' without entering a character gives warning message "Text too short". 'Key' responses:

- 'C' clears current character.
- 'End key' terminates the proactive session.
- 'Back' – Backward move in the proactive session.
- 'OK' – Command performed successfully.

### Get input

Prompt for character input. The phone will refuse to accept further input when maximum response length is exceeded. UI Maximum Response lengths:

- Digits Only – 160 characters.
- SMS default alphabet characters – 160 characters.
- Hidden Characters (digits only) – 20 characters.

'Key' responses:

- 'C' clears current character.
- 'End key' terminates the proactive session.
- 'Back' – Backward move in proactive session.

- 'OK' – Command performed successfully.

all the items sent in the Set Up Menu command will be available for selection, in the same way as the Select Item command.

### Select item

Scroll to highlight item for selection. 'Key' responses:

- Navigational key press down – Scroll down list.
- Navigational key press up – Scroll up list.
- End key terminates proactive session.
- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

### Send short message

Alpha Identifier text is displayed, if it is present. Otherwise, there is no user indication if the customization for default text is not enabled. If the customization for default text is enabled, and there is no Alpha Identifier, default message "Sending message" is displayed. Default responses are "Message failed" or "Message sent" for the customization enabled case with no Alpha Identifier.

'Key' responses:

- End key or 'Back' ends the proactive session.

### Set up call

If you are on a call when the commands 'Set up Call', 'Putting all other calls on hold' are sent, the user will see the "Let SIM card setup call" user confirmation text. If 'OK' is pressed the current call will be put on hold and the new call set up. If the phone is on a call when the command 'Set Up Call, disconnecting all other calls' is sent, the user will see the 'Let SIM card setup call' user information text. If the 'OK' key is pressed the current call will be disconnected and the new call set up.

### Set up menu

Incorporates a SIM Application Toolkit Menu Item into the ME's main menu structure.

If an Alpha Identifier is supplied in the Set Up Menu command, this is used as the SIM AT entry in the ME's main menu. If null alpha identifier is supplied and several items are found in the menu, the default title "ONLINE SERVICES" is used. If the SIM AT Menu Item is selected by pressing 'Select',

# Entertainment

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## Audio and Video

File types	Formats	Extensions
Audio (All listed audio file formats are supported ringtone file formats)	MP4 MP3 M4A 3GPP™ AMR-NB AMR-WB WAV General MIDI (GM) SP-MIDI RealAudio® 8 iMelody XMF WMA WMA Pro (profile M0)	.mp4 .mp3 .m4a .3gp .amr .awb, .amr .wav .mid .mid .ra, .rm .imy .xmf .wma .wma
Video (including audio part)	MP4 (video: MPEG4, audio: AAC or AMR) 3GPP™ (video: MPEG4 or H.263, H.264, audio: AAC or AMR) RealVideo® 8, 9, 10 WMV	.mp4 .3gp  .rv, .rm wmv, .asf
Streaming transport	RTSP according to 3GPP™	
Video encoding	H.263 Profile 0, Level 10 MPEG-4 Simple Visual Profile Level 3	
Video decoding	MPEG-4 Simple Visual Profile Levels 0, 1, 2 H.263 Profile 0, Levels 10, 20, 45 H.264 Baseline Profile (Main subset), Levels 1b, 1.1 RealVideo 8	
Audio encoding	AMR-NB AAC (for video recording only)	
Audio decoding	MP3 (MPEG-1/2/2.5, audio layer 3) AAC AAC+ eAAC+ AMR-NB AMR-WB RealAudio 8 (depending on configuration) WMA version 2,7,8: Class 1 WMA version 9: Level 3 WMA Pro (profile M0) GM GML SP-MIDI	

# Java™

Feature	Functionalities
<b>Java™ Platform, Micro Edition</b>	<ul style="list-style-type: none"> <li>• JSR-75 PDA/File</li> <li>• JSR-82 Bluetooth Wireless Technology API</li> <li>• JSR 118 MIDP 2.1</li> <li>• JSR-120 Wireless Messaging API</li> <li>• JSR-205 Wireless Messaging API 2.0</li> <li>• JSR-135 MMAPI 1.1</li> <li>• JSR 139 CLDC 1.1</li> <li>• JSR-172 Web Services</li> <li>• JSR-177 Security and Trust Services</li> <li>• JSR-179 Location API (built-in GPS)</li> <li>• JSR-180 SIP</li> <li>• JSR-184 Mobile 3D Graphics</li> <li>• JSR 185 Java™ Technology for the Wireless Industry</li> <li>• JSR-211 Content Handler</li> <li>• JSR-226 SVG</li> <li>• JSR-229 Payment</li> <li>• JSR-234 Adv Multimedia Supplements</li> <li>• JSR-238 Mobile Internationalization</li> <li>• JSR-239 OpenGL ES</li> <li>• JSR-248 Mobile Service Architecture</li> <li>• Nokia UI API</li> </ul>
<b>Java 3D</b>	<ul style="list-style-type: none"> <li>• Mascot Capsule Ver.3</li> <li>• JSR-239 OpenGL ES</li> <li>• JSR-184 Mobile 3D Graphics API for J2ME™</li> </ul>

## Imaging/Messaging

### 2.0 Megapixel camera

Digital still camera (DSC)	
True colour	Yes
Digital zoom	Main camera: 2.5x zoom for pictures (in VGA mode)
Photo fix	Improves an under-exposed picture by calculating and adjusting the light balance
Photo fix	Improves an under-exposed picture by calculating and adjusting the light balance
Still camera settings bar	
Shoot modes	Normal, Burst, Panorama, Frames



Scenes	Auto, Twilight landscape, Twilight portrait, Landscape, Portrait, Beach/Snow, Sports, Document
Picture sizes (resolution)	<b>2 MP</b> (1600x1200 pixels) <b>1 MP</b> (1280x960 pixels) <b>VGA</b> (640x480 pixels) Note: MP = Megapixel
Focus	No
Flash (Xenon)	N/A
Self-timer	Off, On
Effects	Off, Black & white, Negative, Sepia
White balance	Auto, Daylight, Cloudy, Fluorescent, Incandescent
Still camera setup	
Picture quality	Normal, Fine
Shutter sounds	Yes
Image stabilizer	No
Reset file number	Yes
Save to memory	Memory card, phone memory
<b>Video recorder</b>	
Video size (resolution)	QVGA (320x240) pixels
Frame rate	30 fps (frames per second)
Video camera settings bar	
Video clip length	Up to 2 hours, For picture message
Focus	Fixed
Night mode	Off, On
Self-timer	Yes, same as camera
Effects	Yes, same as camera
White balance	Yes, same as camera
Turn on/off microphone	Off, On

## Images

Images can be shared using a Bluetooth connection, MMS, email message, computer file transfer or memory card.

The image size is limited by the amount of free RAM.

Formats	Details
JPEG	ISO/IEC JPEG Baseline DCT Progressive DCT Non-differential Unlimited size
GIF	87a, 89a, support for interlacement, animation and transparency. Unlimited size
BMP	Windows® bitmap format
PNG	Unlimited size
SVG	SVG Tiny 1.2
WBMP	Wireless bitmap Unlimited size

## Supported character set

Decoding text (Incoming MMS)	
US-ASCII	UTF-16
ISO-8859-1	KOI8-R
ISO-8859-2	GB2312
Windows-1251	GB 18030
ISO 10646 (UCS-2)	GB 13000
UTF-7	BIG-5
UTF-8	
Coding Text (Outgoing MMS)	
UTF-8	

## Short Messaging Service

Feature	Support
SMS Service Centre Number	It is possible to pre-load the SMS Service Centre Number
Pictures	It is possible to insert a picture or an icon into the text message. EMS compliant mobile phones will be able to see the picture correctly
Reply to messages	It is possible to reply to received messages by SMS, MMS, voice message and email
Input methods:	Predictive writing and multitap

Feature	Support
Copy and paste words	Yes
Teaching of predictive words that are not in the predictive dictionary	Yes
Possibilities when creating a message:	
Save a sent message in a "Sent items" folder	Yes
Insert a line in the message	Yes
Assign a validity period to the message	Yes
Use predefined messages	Yes
Possibilities when receiving a message:	
Reply to the sender	Yes
Forward the message	Yes
Save the message on the SIM card	Yes
Get delivery time and date	Yes
Possibilities of the previously sent message:	
Delivery report of the message	Yes (if requested when sending)
Forward the message	Yes
Save the message on the SIM card	Yes
Know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to SIM
Possibilities of the previously received message:	
Reply to the sender	Yes
Save the message in the inbox	Yes
Forward the message	Yes
Know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to SIM
Supported ways for replying to a received SMS:	
Via SMS, MMS, voice message, email	Yes
Via phone call (set up a call to the number contained in the message body)	Yes
Via Web browser (go to the Web address contained in the message body)	Yes
Via USSD session	No

Feature	Support
Print via infrared	No
Possibility to enable the user to send a text message to a list of recipients	Yes
Possibility to write an email address as a recipient address	Yes, if email gateway is present
SMS storage	In the phone memory, on the SIM card, or on memory card
Nokia Picture Messaging	Yes

## Enhanced Messaging Service

Feature	Support
Level of compliance supported by the phone regarding the specifications described in release 99	Enhanced Messaging Service (EMS) according to the standard 3GPP™ TS 23.040 v4.3.0, with the addition of the ODI feature from 3GPP™ TS 23.040 v5.0.0
Number of messages that the phone is able to handle to generate a concatenated message	10
Outgoing messages	It is possible to: <ul style="list-style-type: none"> <li>• See how many short messages an EMS message consists of before sending it.</li> <li>• Choose whether to send the message or not after writing it.</li> </ul>
Incoming messages	<ul style="list-style-type: none"> <li>• A signal is heard once all parts of the message have been received or when a time-out occurs.</li> <li>• It is possible to re-use the content of an EMS message. Sounds, pictures, and animations can be inserted in a new message, if the object is not protected using ODI.</li> </ul>
Delivery report for concatenated messages	A receipt is received in the phone when all parts of a concatenated message have been delivered if a delivery report is requested when it is being sent
Insert objects	It is possible to add pictures, animations and sounds to an EMS message
Sounds	Chimes high, chimes low, ding, tada, notify, drum, claps, fanfare, chords high, chords low
I-melody	Yes, version 1.2
Melodies	It is possible to: <ul style="list-style-type: none"> <li>• Receive (always), send using EMS (if not copyright protected).</li> <li>• Download melodies and commercial tunes from the Web.</li> </ul>

Feature	Support
WBMP	Yes
Picture sizes	16x16, 32x32 pixels, variable size in black and white
Pictures	It is possible to: <ul style="list-style-type: none"> <li>Edit pictures using PhotoDJ™.</li> <li>Receive (always), send using EMS (if not copyright protected).</li> <li>Download pictures from the Web.</li> </ul>
Animations	There is support for the following animations: Angry, Crying, Flirty, Happy, Kiss, Sad, Tongue, Wow, Confused, Devil, Glasses, Indifferent, Laughter, Sceptical and Wink, as defined in 3GPP™ TS 23.040 v4.3.0. It is possible to send and receive animations
TP-PID field value given by the phone before sending an EMS message	0x00

## Multimedia Messaging Service

Feature	Support
MMS/CSD parameters and MMS/GPRS parameters placement	MMS is bound to an MMS profile. A MMS profile is bound to a Data account. A data account contains either CSD parameters or GPRS parameters and possibly proxy settings
Possibility to pre-configure the MMS parameters in the factory	<ul style="list-style-type: none"> <li>MMS/CSD: Yes</li> <li>MMS/GPRS: Yes</li> </ul>
Possibility to configure the MMS parameters by OTA provisioning	<ul style="list-style-type: none"> <li>MMS/CSD: Yes</li> <li>MMS/GPRS: Yes</li> </ul>
Possibility for all the parameters from the parameters set to be OTA provisioned at the same time	<ul style="list-style-type: none"> <li>MMS/CSD: Yes</li> <li>MMS/GPRS: Yes</li> </ul>
Possibility for only one parameter, in the set of parameters, to be OTA provisioned	<ul style="list-style-type: none"> <li>MMS/CSD: No</li> <li>MMS/GPRS: No</li> </ul>
Supplier indication of realized interoperability tests between its MMS User Agent and MMS Relay/Server from other suppliers	Yes
Support of a standard procedure for OTA provisioning of MMS parameters	OMA Client Provisioning 1.1

Feature	Support
Functionalities that the user is able to set during message composition:	<ul style="list-style-type: none"> <li>• Message subject</li> <li>• Message priority</li> <li>• Email recipient address</li> <li>• Message Cc, Bcc recipient(s) address(es)</li> <li>• Delivery report request</li> <li>• Read report request</li> <li>• MSISDN recipient address</li> <li>• Delivery time</li> <li>• Validity period</li> </ul>
From where can the user insert multimedia elements into multimedia messages:	File Manager Photo album Camera Contacts Calendar Task Note Browser (vBookmark) VideoDJ™ PhotoDJ™ MusicDJ™ Sound recorder
Possibility for sent messages to be memorized into a folder in phone memory	Yes
Actions that the user can perform after message retrieval:	<ul style="list-style-type: none"> <li>• Reply to the sender of the message SMS/MMS</li> <li>• Reply to the sender and to Cc, Bcc people SMS/MMS</li> <li>• Forward the message</li> <li>• Delete the message</li> <li>• Save message in a dedicated folder</li> <li>• Call the sender of a message</li> <li>• Save item</li> <li>• Mark as unread</li> <li>• Details</li> </ul>
Multimedia codecs/formats supported for audio	AAC, AMR, MPEG Layer 3, Real 8, AWB, WAV, MP4, MIDI, iMelody, 3GPP™, XMF, M4A, WMA
Multimedia codecs/formats supported for video	MPG4, 3GPP™, SDP, Real 8, WMV
Multimedia codecs/formats supported for image	JPEG, GIF87, GIF89A, PNG, SVG, WBMP, BMP
Supported formats for message presentation:	<ul style="list-style-type: none"> <li>• Message body plus attachments (email presentation)</li> <li>• SMIL version as described in OMA MMS IOP document version 1.2</li> </ul>
Maximum message size that can be handled by the phone	Content Class and Creation mode are applied. Maximum size can also be customized
Maximum number of objects supported in a message	30 objects is standard. It is possible to increase the number through configuration
Maximum text size	5,000 characters/text

## Email client technical data

Feature	Support
Bearer type (IP)	Yes
Bearer type GSM Data (IP)	Yes, GPRS, HSCSD, ISDN and analog
Character sets	ISO: ISO-8859-1, ISO-8859-2, ISO-8859-5, ISO-8859-7, ISO-8859-9, ISO-8859-10 Windows: Windows-1251, Windows-1252, Windows-1254, Windows-1255, Windows-1258 US-ASCII Unicode: UTF-7, UTF-8, UTF-16 Japanese: Shift_JIS, ISO-2022-JP Cyrillic: KOI8-R Simplified Chinese: GB2312, GB18030 Traditional Chinese: Big5 Thai: TIS-60
OTA provisioning solution	OMA Client Provisioning 1.1
Protocols	POP3 and IMAP4
Push email	IMAP IDLE (extension of IMAP4 Rev1), OMA Email Notification 1.0 and scheduled checking, Exchange ActiveSync® (EAS)
Secure email	SSL/TLS, both port methods (POPS/IMAPS) and STARTTLS
HTML mail	Yes (tags removed)
Thumbnailed image attachments	Yes
Message management	User selectable inbox size, save messages to Memory Stick, arrange messages by date, size and Email address.
ESMTP	Yes
Background sending	Yes

# Connectivity

## Bluetooth™ technical data

Dimension	Support
Bluetooth capability statement	This phone supports Bluetooth Specification, version 2.0 with enhanced data rate (EDR)
Bluetooth profiles	Advanced Audio Distribution Profile Audio/Video Remote Control Profile Basic Imaging Profile Dial-up Networking Profile File Transfer Profile Generic Access Profile Generic Object Exchange Profile Handsfree Profile Headset Profile Human Interface Device Profile Object Push Profile Personal Area Networking Profile Phonebook Access Profile Serial Port Profile Synchronization Profile SyncML OBEX binding
Connectable devices	All products supporting Bluetooth spec. 1.1, or higher, and at least one of the profiles above
Coverage area	Varies due to radio performance between the connected devices and the occurrence of obstacles. Up to 10 metres (33 feet)
Transmission power	Class 1, typical +3 dBm or 2 mW
Frequency band	2.4 GHz – the unlicensed ISM band
Power consumption	GSM host processor excluded: <ul style="list-style-type: none"> <li>• Standby, Bluetooth On mode: &lt;0.6 mA</li> <li>• Voice to headset (HV3 master): 11 mA (7 mA with EDR functionality, 2EV3 master). Dependent on various parameters such as if the phone is master or slave</li> <li>• Data mode average: 27mA at 172.8 Kbps symmetrical (DH1)</li> </ul>
Data transmission rate	<ul style="list-style-type: none"> <li>• Data speed at least 800 Kbps on a Dial-up Networking connection (requires access to HSDPA network and may be limited by capacity situation on the 3G base station)</li> <li>• Data speed typically 1.0 Mbps on an Object Push connection between two phones (in case of using similar phones and if no other Bluetooth devices are connected)</li> </ul>



## OMA Data Synchronization (SyncML™) technical data

Feature	Support for Sync ML
SyncML compliance	The phone is fully SyncML compliant, having passed SyncML Conformance testing. OMA DS 1.2 or OMA DS 1.1.2 is used depending on configuration and both are supported in Server-alerted synchronization
Basic data formats	Contacts: vCard 2.1, Calendar: vCalendar 1.0 (vEvent) Tasks: vCalendar 1.0 (vTodo) Notes: text/plain, Bookmarks:vBookmark 1.0
Possibility for operators to extend SyncML functionality	The device may be configured to include preset SyncML settings, and to control whether SyncML 1.1 or SyncML 1.2 will be used
Transport method for SyncML messages	HTTP, HTTPS, OBEX (USB, Bluetooth)
Possibility for the user to configure login parameters (for example, username and password) to access the remote database	Yes
Configuration parameters that can be entered/modified by the user	Server URL, Username, User PWD, Paths to databases (Calendar, Contacts, Notes, Tasks and Bookmarks), UserID and PWD for databases, Databases to be synchronized (On/Off), Internet profile, Synchronization interval, Server ID and Server PWD, permission to allow server-alerted synchronization and roaming options. Can be provisioned with OMA Client provisioning v1.1 and OMA Device Management v1.2
Ability to deal with multiple servers	Yes
Ability to perform conflict resolution actions	Yes

## Microsoft® Exchange ActiveSync®

Feature	Support for Exchange ActiveSync
Protocol version	The phone supports version 2.5 of Microsoft Exchange ActiveSync
Supported applications	Email, Calendar, Phonebook
Transport method used	HTTP, HTTPS
Possibility for the user to configure login parameters for remote server	Yes
Configuration parameters that can be entered/modified by the user	Server URL, username, domain name, password, applications to sync, email message size, email attachment size, email date range, message alert sound, calendar date range, interval sync, secure connection, roaming option

Feature	Support for Exchange ActiveSync
Ability to use multiple servers	No
Ability to perform conflict resolution	No

## Web browser technical data

Feature	Support in the browser
Bookmarks	Yes, with folders and sorting supported
Bookmark Export/Import	Yes, can be sent and received using vBookmark format using Bluetooth™, SMS, MMS and email
Browser compliancy	<p>The Web browser is compliant with the following standards:</p> <p>HTML ver. 4.01  XHTML Basic 1.0  XHTML 1.1, Module-based XHTML  XHTML Mobile profile  WML 1.3  Cascading Style Sheets, level 2 revision 1, CSS 2.1 Specification  Wireless CSS Specification, Version 26-Oct-2001 (WAP-239-WCSS-20011026-a)  ECMA-script according to specifications found at  <a href="http://www.ecma-international.org/publications/standards/Stnindex.htm">http://www.ecma-international.org/publications/standards/Stnindex.htm</a>  ECMAScript Mobile Profile  AJAX  Document Object Model Level 2 (DOM 2)  Scalable Vector Graphics, Mobile SVG Profile: SVG Tiny, version 1.2</p> <p>For further details, see the <i>WAP User Agent strings and profiles for Sony Ericsson mobile phones</i> Developers guidelines at Developer World <a href="http://developer.sonyericsson.com/">http://developer.sonyericsson.com/</a></p>
Browser version	Access NetFront 3.4
Cache	Yes (size 2 MB)
Character sets *	<p>Most standard character sets, among others UTF-8 (Default), UTF-16, USASCII, Latin1, UCS2.</p> <p>For updated and detailed information, see the <i>WAP User Agent strings and profiles for Sony Ericsson mobile phones</i> Developers guidelines at Developer World <a href="http://developer.sonyericsson.com/">http://developer.sonyericsson.com/</a></p> <p>* When creating pages, it is recommended to always save the page contents as UTF-8.</p>
Clear cache	Yes, persistent. By user interaction, at SIM card change or master reset
Frames	Full Frame support: Frames, IFrames
Image formats and animations	GIF (interlaced and non-interlaced) WBMP, JPEG, PNG, BMP and SVG. Animated GIFs, animated SVG and Flash

Feature	Support in the browser
Schemes	Wtai, mailto:, smsto:, tel, rtsp, http, https
Streaming	Progressive download, RTSP, Java script controls
Web feeds	Ticker, podcasts, enclosures, OPML import. No support for ATOM
<b>User agent profile</b>	
User Agent Profiles	Yes, list of client characteristics - for example screen size. For details, see the <i>WAP User Agent strings and profiles for Sony Ericsson mobile phones</i> Developers guidelines at Developer World <a href="http://developer.sonyericsson.com/">http://developer.sonyericsson.com/</a>
URL sent pointing to the UA profile at the beginning of browser session	Yes. For details, see the <i>WAP User Agent strings and profiles for Sony Ericsson mobile phones</i> Developers guidelines at Developer World <a href="http://developer.sonyericsson.com/">http://developer.sonyericsson.com/</a>
<b>Download</b>	
OMA download functionality	Yes
HTTP GET solution to download content/ Uses browser for download	Yes
Other download content	Yes. No download limit when using HTTP protocol
Download application/product memory check	Yes
Downloaded object solution	Yes. The user is informed where the content is saved and asked if it should be used at once or later
UAP indication for downloading	Yes
Other features	Yes. Save, delete, forward, use, manage
Object formats	All formats can be downloaded and saved, but only formats supported by the phone can be used by the phone
Resume	Yes
Background download	Yes
Progressive download	Yes
Streaming	Yes
<b>Browser navigation</b>	
Selection keys	Yes. Two selection keys and centre navigation key
Separate/dedicated back or erase keys	Yes
Display backlight on when browsing	Yes
Predictive writing	Yes

Feature	Support in the browser
“http://” string displayed automatically when entering URLs	Not displayed but the “http://” is added automatically to the URL
“www” added automatically when entering URLs	No
Combined Search/Go To input field	Intelligent input field changes appearance (Search or Go to) depending on user input. “www”, “.com” and other URL syntax can be used to trigger the Go To appearance
<b>Internet network features</b>	
Bluetooth (as local connection)	Yes
Infrared (as local connection)	No
Network settings	Yes
PPP Authentication	PAP, CHAP supported
Security	HTTPS authentication TLS version 1 SSL version 3 WIM on SIM ICC X.509 certificate support, Mobile Profile WPKI OTA download of trusted certificates
USB (as local connection)	Yes
<b>PUSH</b>	
<b>Content types</b>	
Service Indication (SI)	Yes
Service Loading (SL)	Yes
Cache Operation (CO) content type	No
Session Initiation Application (SIA)	Yes
<b>Man Machine Interface</b>	
SI/content retrieval postponing	Yes
SI menu structure accessibility	Messaging, Inbox
SL reception warning	The user can make a choice if a dialogue is wanted or not before loading the SL
SIA reception warning	Yes
Cache size limitations	The oldest push in the inbox will be discarded
Number of push messages	Depends on the size of the push messages. Around 20 push messages with a size of 1024 bytes URL and 1024 bytes Indications for Service Indication can be saved.

Feature	Support in the browser
Push deactivate	Yes
Dynamic push menu changes	No. There are no changes in the menus when activating/deactivating push
<b>Security</b>	
Mechanisms for push	None
Trust with PPG	Sending a SIA is the most reliable
WSP push sessions	No
HTTP push sessions	The White List (a setting to allow push messages only from certain addresses) is supported for IP address
SMS connection-less push	The White List (a setting to allow push messages only from certain addresses) is supported for SMS Center
Denial of service/spoofing	Setting to select when to allow push messages: Always, always ask or never. There is also a setting to select whether to allow push messages from all senders or only from certain addresses (the White List)

## Client Provisioning

Feature	Support
<b>Provisioning types</b>	<b>OMA Client Provisioning (v1.1)</b>
Total Parameter sets	10 (shared between the provisioning types) < or = 10 (total number of data accounts)
Parameter set list	See the <i>Device Management v3 Developers Guideline</i> at Developer World <a href="http://www.sonyericsson.com">http://www.sonyericsson.com</a>
Factory pre-configuration	Yes. This also provides the possibility to lock a setting
<b>Bearer</b>	
SMS	Uses security mechanism (SEC) methods according to OMA-WAP-ProvCont-v1_1-20050428-C(see <a href="http://www.openmobilealliance.org">www.openmobilealliance.org</a> ). For NETWPIN the user is asked to accept to install received settings. For USERPIN, USERNETWPIN and USERPINMAC the user is subsequently asked to enter a PIN code that is a shared secret between the service provider and the user
Carrier reset/provisioning	Yes, but not if the set is pre-configured in the factory and locked
SWIM	Not used for provisioning. The SWIM is only used for wireless security, both SSL/TLS connections and digital signatures
<b>Applicative provisioning</b>	
Preferred bearer customization	Yes

Feature	Support
Other applications/features	Yes (MMS, Email, OMA Data Synchronization, Wireless Village, OMA Device Management, Streaming)
<b>Technologies</b>	
OMA Client Provisioning	Yes, Client Provisioning version 1.1
Nokia/Ericsson OTA	No
Openwave OTA	No
Other	No
Provisioning bearer	SMS

# Abbreviations

## **3GPP™**

3rd Generation Partnership Project

## **A-GPS**

Assisted GPS

## **AAC**

Advanced Audio Coding

## **AAC+**

High Efficiency AAC v.1

## **AJAX**

Asynchronous JavaScript and XML

## **AMR**

Adaptive Multi Rate. Audio format for speech sounds

## **AMR-NB**

Adaptive Multi Rate Narrow Band

## **AMR-WB**

Adaptive Multi Rate Wide Band, a more efficient codec that supports speech with higher quality

## **API**

Application Programming Interface

## **Bluetooth PAN**

Bluetooth Personal Area Network

## **CS**

Circuit Switched

## **CSD**

Circuit Switched Data

## **DRM**

Digital Rights Management. Controlling copying and distribution of contents, with respect to intellectual property rights

## **DTMF or Touch Tone**

Dual Tone Multi-Frequency signal. Codes sent as tone signals. Used for telephone banking, accessing an answering machine, etc.

## **EDGE**

Enhanced Data Rates for GSM Evolution

## **e-GSM**

Extended GSM. New frequencies specified by the European Radio Communications Committee (ERC) for GSM use when additional spectrum is needed (network-dependent). It allows operators to transmit and receive just outside GSM's core 900 frequency band. This extension provides increased network capability

## **eAAC+**

High Efficiency AAC v.2

## **EDR**

Enhanced Data Rate

## **EFR**

Enhanced Full Rate, speech coding

## **EMS**

Enhanced Messaging Service. Allows the user to add simple pixel pictures and animations, sounds and melodies to a text message. The EMS 3GPP™ standard also includes text formatting

## **ETSI**

European Telecommunications Standards Institute

**FM**

Frequency Modulation of the (radio) carrier wave

**FR**

Full Rate, speech coding.

**GIF**

Graphics Interchange Format

**GPS**

Global Positioning System

**GPRS**

General Packet Radio Services

**GSM**

Global System for Mobile Communications. GSM is the world's most widely used digital mobile phone system, now operating in over 100 countries around the world, particularly in Europe and Asia-Pacific.

The GSM system family includes GSM 850, GSM 900, GSM 1800 and GSM 1900. There are different phases of roll-out for the GSM system and GSM phones are either phase 1 or phase 2 compliant

**HR**

Half Rate, speech coding

**HSCSD**

High Speed Circuit Switched Data

**HSDPA**

High Speed Downlink Packet Access

**HTML**

HyperText Markup Language

**HTTP**

HyperText Transfer Protocol

**IrDA**

Infrared Data Association

**JPEG**

Joint Photographer Expert Group

**MIDI**

Musical Instrument Digital Interface

**ME**

Mobile Equipment

**MMI**

Man-Machine Interface. See UI

**MP**

Megapixel

**MP3**

Short for "MPEG-1 layer 3", an audio coding scheme

**MPEG4/MPG4**

Moving Picture Experts Group. MPEG-4 is a standard used primarily to compress audio and visual digital data.

**MT**

Mobile Termination

**ODI**

Object Distribution Indicator

**OMA**

Open Mobile Alliance

**OTA**

Over The Air

**PDA**

Personal Digital Assistant



**PDP**

Packet Data Protocol

**PIM**

Personal Information Management

**PNG**

Portable Network Graphic

**QCIF**

Quarter Common Intermediate Format

**RDS**

Radio Data System

**RSS**

Really Simple Syndication

**RTSP**

Real Time Streaming Protocol session control.

**SI**

Service Indication

**SL**

Service Loading

**SIM card**

Subscriber Identity Module card – a card that must be inserted in any GSM-based mobile phone. It contains subscriber details, security information and memory for a personal directory of numbers. The card can be a small plug-in type or credit card-sized, but both types have the same functions. The phone uses the small plug-in card.

**SMS**

Short Messaging Service. Allows messages of up to 160 characters to be sent and received via the network operator's message centre to a mobile phone

**SP-MIDI**

Scalable Polyphony MIDI

**SS**

Supplementary Services

**SSL**

Secure Socket Layer

**TLS**

Transport Layer Security

**TTI**

Transmission Time Interval

**UI**

User Interface

**URL**

Uniform Resource Locator.  
The global address of documents and other resources on the World Wide Web

**USSD**

Unstructured Supplementary Services Data

**vCard**

vCard automates the exchange of personal information typically found on a traditional business card, for use in applications such as Internet mail, voicemail, Web browsers, telephony applications, call centres, conferences, PIMs /PDAs, pagers, fax, office equipment and smart cards. vCard is specified by IETF

**VGA**

Video Graphics Array

**WAV**

Waveform audio format

**WMA**

Windows Media Audio

## **WMA Pro**

Windows Media Audio Professional

## **WBMP**

Wireless BitMap.

A graphic format optimized for mobile computing devices

## **WCDMA**

Wideband Code Division Multiple Access

## **WML**

Wireless Markup Language. A markup language used for authoring services, fulfilling the same purpose as HyperText Markup Language (HTML) does on the World Wide Web (WWW). In contrast to HTML, WML is designed to fit small handheld devices

## **WWW**

World Wide Web

## **XHTML**

Extensible HyperText Markup Language

## **XML**

Extensible Markup Language

# Related information

## Documents

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- Sony Ericsson User guide
- Sony Ericsson FAQ
- AT Command Reference Manual
- WAP 2.0 Specifications

## Links

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- [www.sonyericsson.com/](http://www.sonyericsson.com/)
- [www.ericsson.com/mobilityworld/](http://www.ericsson.com/mobilityworld/)
- [www.midi.org](http://www.midi.org)
- [www.extendedsystems.com](http://www.extendedsystems.com)
- [www.gsmworld.com/](http://www.gsmworld.com/)
- [www.bluetooth.com](http://www.bluetooth.com)
- [www.imc.org](http://www.imc.org)
- [www.3gpp.org](http://www.3gpp.org)
- [www.irda.org](http://www.irda.org)
- [www.etsi.fr](http://www.etsi.fr)
- [www.openmobilealliance.org](http://www.openmobilealliance.org)
- [www.imc.org/pdi/](http://www.imc.org/pdi/)
- [www.w3.org/TR/xhtml-basic/](http://www.w3.org/TR/xhtml-basic/)
- [www.java.sun.com](http://www.java.sun.com)
- [www.memorystick.org/](http://www.memorystick.org/)
- [www.memorystick.com/](http://www.memorystick.com/)
- [www.sonyericsson.com/updateservice](http://www.sonyericsson.com/updateservice)
- [www.sonyericsson.com/support](http://www.sonyericsson.com/support)

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